Industrial Economics

Contestable Markets

Andras Niedermayer

DAUPHINE UNIVERSITÉ PARIS

Contestable Markets

- We have seen the problems that unregulated monopoly with increasing returns and pricing at MC = MR creates for welfare. The alternative, regulation at P = AC raises the issue of regulatory transaction costs, imperfect knowledge and informational asymmetries.
- The theory of contestable markets offer a fascinating way to avoid this dilemma: under certain conditions the market itself will bring about quasi-optimal average cost pricing even with firms operating under increasing returns to scale.
- The key distinction is between fixed costs and sunk costs. Fixed costs refer to a minimal size of investment, the size of the firm and increasing returns to scale. Sunk costs refer to the inability to recover investment costs once spent. Usually, we consider fixed costs as sunk. The theory of contestable markets dissociates the two by placing them on different time horizons.

...

- For example:
  1. a railway network: fixed and sunk;
  2. machines specialized in the production of a single good: sunk but not fixed since scalable;
  3. a fleet of aircrafts: fixed, but not sunk to the extent that there exist a secondary market or alternative routes.

...

- The examples indicate that the distinction between the two concepts is not always easy. Indicators for distinguishing between fixed sand sunk costs are nevertheless:
  - Ability to sell fixed investments on a secondary market (obvious questions in tis context are
    1. What is the write-down?
    2. What are the transaction costs (negotiation, information, legal fees etc.)?
    3. What is the specificity of the factor of production in question; the more specific it is to a market, the higher will be the discount
  - Existence of a rental market or the possibility to outsource fixed factors.
  - Possibility to rotate fixed factors between several markets at low costs. Switching costs are crucial in this context.

...

- The time dimension is important here. In the very long run, no factor is really sunk (provided it has not become obsolete).
- In the short run, almost all factors are sunk. Recall the four time horizons according to Marshall.
- The key idea of the theory of contestability developed by Baumol, Panzar and Willig is precisely that fixed factors are not automatically sunk. In this case, exit and entry are easily possible also in industries with high fixed costs and monopolisation. If this is so, the market is contestable, i.e. prices cannot be raised above average costs. There exists virtual competition through potential entrants outside of the market.

...

- This links to the previous discussion about "barriers to entry". Only fixed cost that are also sunk, constitute a commitment, a credible barrier to entry and hence a possibility to earn monopoly profits, with $p > AC$.
- The paradigmatic example is a fleet of expensive airplane that can be transferred easily with almost no additional cost (since, precisely, they are not sunk) from one market to another (e.g., switching from Paris-London to Paris-Rome).
- The theory of contestable markets was, in fact, primarily developed in the context of the deregulation of the airline industry in the United States in the early 1980s.

Some observations:

1. The theorists of contestable markets have naturally turned their interest to multi-product firms (conglomerates) such as GE or Siemens that rotate their management skills among several markets.
2. The notion that fixed costs are barriers to entry is completely transformed. Fixed cost that are not sunk are no barriers to entry and have no negative welfare implications.
3. A level of quasi-optimal output (in the sense of $P = AC$) can be reached by a single firm under increasing returns to scale with free competition and without regulatory intervention.

...

4. Sunk costs of any form (physical capital, reputation, patents, customer relationships, brand names, long-term contracts etc.) continue to form barriers to entry. They constitute commitments in the sense of the Stackelberg or the market foreclosure models. In this sense, even a reputation for aggressiveness in pricing can constitute a "sunk cost".
5. Reputation alone, however, is not enough to monopolize the market. An equally aggressive entrant might trigger a "war of attrition" with $P = MC$, up to the point where one of the two competitors leaves the market with $MC = MR$ at least for a limited period.
   $\rightarrow$ add figure here

...

6. If both firms go all the way and are perfectly rational with perfect foresight; losses during the first period will be equal to the profits counted second period with $AC - MC = \delta(P_m - AC)$. The combined profits of both periods will be zero. Tacit or explicit collusion would have been far more favourable.
7. If costs are not sunk, then there exists the possibility of "hit and run" entry. The entrant enters when $P > AC$ but retreats without cost as soon as the incumbent lowers the price below the entrant's average cost.
8. In contestable markets, i.e. markets that can be exited without costs, prices are therefore set at average cost ($P = MC$). This is the only way to block a new entrant, whose entry would reduce prices below the average cost.

9. This quasi-optimal situation even holds true for a natural monopoly with increasing returns over the whole range of production, as long as the market is contestable, i.e. can be entered and exited at no cost.
10. Potential or virtual competition, we may also say the mere "threat of entry" has almost the same effect as the actual competition. The difference is, of course, that in actual competition $P = MC$ and in virtual competition $P = AC$.

11. In the best of cases, contestability results in so-called sustainable constellation characterised by the following three conditions:
    1. Only one firm produces (production is technologically efficient due to IRTS).
    2. Profits are zero, $\Pi = 0$. This means that no entry can profitably take place.
    3. Prices are equal to average cost, $P = AC$. This is the socially optimal situation in the absence of any lump-sum transfers to ensure $\mathrm{P} = \mathrm{M}$.

...

4. There can also be unsustainable situations. The U-shaped average cost curve, for instance, creates an unsustainable allocation without a stable equilibrium:
   $\rightarrow$ draw figure here
   The socially optimal constellation (Qc, Pc) is unsustainable because a new entrant could always enter with (e.g., Qe, Pe) making positive profits by setting a price higher than average costs but lower than Pc. The second condition of sustainability would not be fulfilled.
   This problem of unsustainability does not exist under increasing returns to scale over the whole area of production.

12. The problem encountered with the U-shaped average cost curve refers to the distinction between increasing returns to scale (IRTS) and subadditivity, a term mainly used in contestable market theory.
    It is less stringent than IRTS but can create problems for sustainable solutions.
    In fact, unsustainable allocations arise if production functions are sub-additive but do not display IRTS over the whole range of production, which is precisely the case of the U-shaped average cost curve.

...

13. We distinguish three different cases:
    1. Decreasing marginal cost with $C'' < 0$.
    2. Decreasing average costs (increasing returns to scale) with $C(q_1)/q_1 > C(q_2)/q_2$ for any given q_1 and q_2 as long as $q_1 < q_2$.
    3. Subadditivity with $\sum_i C(q_i) > C(\sum_i q_i)$; in other words, it is cheaper to produce the sum of all the parts together rather than the different parts separately.

...

14. The issue becomes obvious in the following numerical example due to Faulhaber. Three cities want to get connected to the water supply. The connection costs are:
    - For 1 city: 300 000 Euro (average cost per city 300 000).
    - For 2 cities together: 400 000 Euro (average cost per city 200 000).
    - For 3 cities together: 660 000 Euro (average cost per city 220 000).

    The socially optimal solution would be to connect the three cities together rather than connect two of them together and the third one separately as
    $660000 < 400000 + 300000 = 700000$.
    The cost per participating city in this case would 220 000.

...

15. However in a free market, two cities will be organize their connection separately with a total cost to the two of them of 400 000 and a cost per participating city of 200 000. The cost to the individual city that was left out would be 300 000 and total costs would be 700 000.
    With such a cost structure also a contestable market (free entry and exit) would not yield a sustainable allocation. In the example above, city 3 could bribe the other two cities to connect together. Remember without transaction costs, private and social optimality is always identical.